

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant(s): Tadros et al.	
Application No.: 09/682,749	
Filed: 10/12/2001	Group Art Unit: 1711
Title: Multilayer, Weatherable Compositions And Method of Manufacture Thereof	Examiner: M. Bissett
Attorney Docket No.: GEPL.P-068	Confirmation No.: 8016

**BRIEF FOR APPELLANT**

This brief is filed in support of Applicants' Appeal from the final rejection mailed 7/14/2005. Consideration of the application and reversal of the rejections are respectfully urged.

Real Party in Interest

The real party in interest is General Electric Company .

Related Appeals and Interferences

To Applicants' knowledge, there are no related Appeals or Interferences.

Status of Claims

Claims 5, 7, 9, 11-18 and 20-25 are pending and are rejected. Claims 1-4, 6, 8, 10, 19 and 26 have been canceled. No other claims have been presented.

Status of Amendments

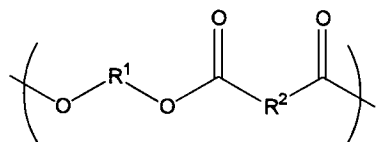
The amendment filed after the final rejection has been entered.

Summary of Claimed Subject Matter

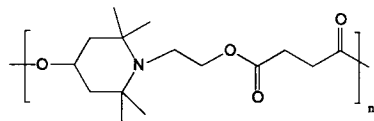
As set forth in independent claim 23, the present invention relates to a layered composition that comprises a minimum of three layers: an upper layer, an intermediate layer, and a substrate, wherein the intermediate layer is disposed between and in intimate contact with the upper layer and the polymeric substrate (§ 0002). Through the use of specified materials in the upper and intermediate layer, Applicants have been able to produce a layered material that has a

variety of desirable properties, namely an enhanced combination of weatherability and heat aging properties, particularly with respect to yellowing or discoloration, and gloss. (§ 0044)

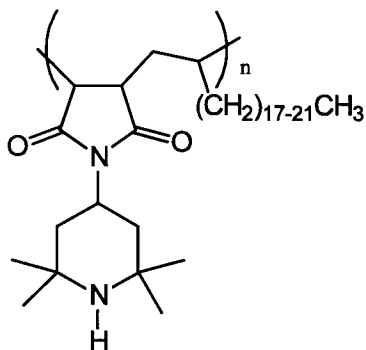
In accordance with the invention, the upper layer consists essentially of a cycloaliphatic polyester and a combination of a specific type of UV absorber and a specific type of hindered amine light stabilizer (§§ 0002- 3, 0019). The intermediate layer consists essentially of a cycloaliphatic polyester and optionally one or more materials selected from the group consisting of  $\text{TiO}_2$ , dyes, pigments and special effects additives (§§ 0002-3). The cycloaliphatic polyester in the upper and intermediate layers has recurring units of the formula:



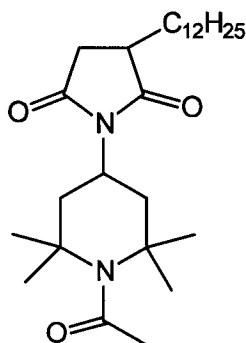
wherein  $\text{R}^1$  and  $\text{R}^2$  are each a cyclohexylidene (§ 0012-13). The hindered amine light stabilizer comprises a substituted piperidine moiety or an oligomer substituted piperidine moiety, or has the formula:



wherein  $n$  is on average greater than 9 and less than 12, by the formula:



wherein n is on average greater than 4, and less than 7, by the formula:



or a mixture comprising at least one of the foregoing hindered amine light stabilizers (¶¶ 0020-26).

#### Grounds of Rejection to be reviewed on Appeal

Claims 5, 7, 9, 11-18 and 20-26 are rejected under 35 USC § 103 as obvious over the US Patent No. 6,136,441 of MacGregor in view of US Patent No. 4,619,956 of Susi.

#### Argument

While a single rejection under 35 USC § 103 is the subject of this appeal, several independent issues are presented. First, Applicants request the Board of Appeals to consider whether there is in fact a *prima facie* case of obviousness presented based on the cited references. Second, if so, Applicants request the Board of Appeal to consider the scope of evidence that is necessary to establish unexpected results and whether this scope has been submitted. Third, Applicants request the Board of Appeals to consider the sufficiency of the evidence presented in the context of individual claims 24 and 25.

*1. There is no prima facie case of obviousness*

As is well established, “obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination.” *Carella v. Starlight Archery and Pro Line Co.*, 804 F.2d 135, 140, 231 USPQ 644, 647 (Fed. Cir. 1986) (citing *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984)). “[T]he factual inquiry whether to combine references must be thorough and searching.” *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001). The mere finding of the isolated elements of an invention in the art is not sufficient. *Ex Parte Hiyamizu*, 10 USPQ 2d 1393, 1394 (POBAI 1988).

In the present case, the claimed composition includes three defined layers in a defined spatial relationship, namely an upper layer, an intermediate layer and a substrate layer. The top two of these layers have a well-defined composition. Specifically, the upper layer **consists essentially** of a cycloaliphatic polyester and certain specified types of UV stabilizers; the intermediate layer **consists essentially** of a cycloaliphatic polyester, and may also include TiO<sub>2</sub> or a dye, pigment or special effects additive.

MacGregor discloses a multilayer structure having a substrate which may be polycarbonate, and an upper layer which may be a cycloaliphatic polyester such as PCCD and which may contain a triazine UV stabilizers and a hindered amine light stabilizer (HALS). MacGregor also mentions the possibility of an intermediate layer “for decorative or functional purposes” (Col. lines 43-46), but does not disclose any specific compositions for use as an intermediate layer. MacGregor differs from the claimed invention in several respects. First, MacGregor does not disclose an upper layer that **consists essentially** of a cycloaliphatic polyester and the UV stabilizers as recited in the claim. Second, there is no disclosure of an intermediate layer within the scope of the invention.

What MacGregor does teach with respect to the composition of the upper or “cap” layer of the invention is that it contains a cycloaliphatic polyester, but that it may also contain polycarbonates, and indeed are said to preferably contain polycarbonates in addition to the

cycloaliphatic polyester (Col. 5, lines 4-32). The upper or "cap" layer of MacGregor composition may also contain other UV stabilizers other than those recited in the present claims. (Col. 6, line 27 et seq.) The examples of MacGregor show 100% cycloaliphatic polyester cap layers, and cap layers with 60/40, 70/30, 50/50 and 10/90 blends of cycloaliphatic polyesters and polycarbonate. No specific example in MacGregor contained both a UV-stabilizer and a hindered amine light stabilizer. In short, while MacGregor teaches the components of the upper layer as claimed, it teaches them in combination with other materials, and does not teach a layer that meets the limitations of the upper layer of the present claims. This requires both selection of materials to include and selection of materials to exclude. The Examiner has not provided a reason that a person skilled in the art would be motivated to make such selections.

The Examiner also relies on MacGregor for a teaching of the intermediate layer. MacGregor discloses the possibility of an intermediate layer for decorative purposes, but as the Examiner acknowledges, "MacGregor does not specifically suggest the use of a PCCD decorative layer as an intermediate layer." (Office Action of January 25, 2005, Page 3). The Examiner argues, however, that it would have been *prima facie* obvious "to apply more than one layer of cycloaliphatic polyester composition to amplify the weatherability properties of the film." The claims of this application, however, are not broadly directed to a layered composition with multiple layers of cycloaliphatic polyester, and thus what the Examiner says is obvious is not really to the point. The claims are specifically directed to a composition with two distinct layers with defined compositions that include cycloaliphatic polyester, and the Examiner has not said why the selection of different layers and the claimed selection of materials for these layers would have been suggested by the reference.

The Susi reference relates only to the UV-absorbers and hindered amine stabilizers. It is not, and could not be relied upon to overcome the deficiencies in the MacGregor reference. Furthermore, the nature of the materials stabilized in MacGregor and Susi is different. MacGregor's coating is a surface coating which is generally transparent to allow an underlying decorative layer to be visible. In contrast, Susi's coating is a high solids coating, i.e., a paint. The compositions are different, and there is no reason, other than after-the-fact reconstruction based

on Applicants' disclosure, to believe that Susi's composition would offer any benefits in MacGregor's upper layer, particularly since MacGregor's composites show 100% gloss retention (Table 11). Thus, the combination of references is improper.

For these reasons, Applicants submit that there is no *prima facie* case of obviousness presented in this case, and that the rejection under § 103 should be reversed.

2. *The evidence of record establishes unexpected results*

Notwithstanding Applicants' belief that the Examiner has failed to present a *prima facie* showing of obviousness, they have submitted additional test results by way of declarations filed under Rule 132. Copies of these declarations are attached in the Evidence Appendix.

In layered compositions such as those now claimed, weatherability is an important factor. Weatherability can be reflected in various parameters, including changes in color (yellowing) and a loss of surface gloss. Applicants have shown by way of examples in the specification and supplemental test results submitted by declaration that the compositions of the invention show surprising superiority with respect to surface gloss, and maintain a shiny, un-dulled finish when exposed to weathering conditions when compared to layer compositions that (1) lack a second layer, (2) have a second layer of a PCCD/PC blend, (3) have a top layer of a PCCD/PC blend, or (4) have both a second layer of a PCCD/PC blend and a top layer of a PCCD/PC blend.

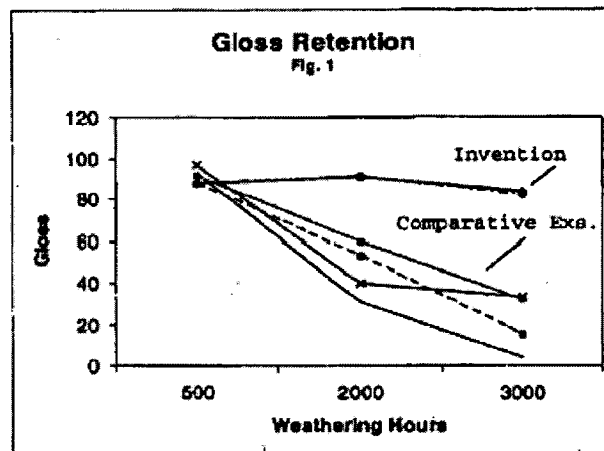
As a first matter, Applicants submit that this result is in fact unexpected. As explained in the Second Declaration Under Rule 132, ¶ 4, gloss is a characteristic of the outer surface of a material. Those skilled in the art believe that loss of gloss upon weathering is the result of non-homogeneous erosion that takes place on the surface and creates roughness. In the compositions of the present invention, the material used to make the intermediate layer has a significant affect on the retention of gloss when the material is weathered. Why this is true is not understood, but the fact remains that Applicants have discovered that for some unknown reason, the ability of the multi-layered structure to maintain its surface gloss is dependent on the nature of the middle layer, not the top layer of the structure. Unlike color change which can be observed through a transparent top layer, even if it occurs in the middle, gloss is a surface (top layer) phenomenon.

Thus, there is no logical explanation for why the nature of this intermediate layer, spaced away from the outer surface would have any bearing on the behavior of this outer surface. Thus, the results, as obtained, are quite surprising and are not something that would have been predicted or expected by a person skilled in the art.

Looking now at the specific data, Composition 1 in the specification is an example in accordance with the present invention. As reflected in Table 2 of the specification, this layer composition had a loss of gloss after 3000 hours decreased by only 6 (from 90 to 84). In contrast, the comparative examples in the application show much poorer performance, in every instance as reflected in the following summary:

Composition	Difference from Composition 1	decrease in gloss
2	different UV stabilizer	75 (90 to 15)
3	PCCD/PC intermediate layer	60 (93 to 32)
4	PCCD/PC top and intermediate layers, different UV stabilizer	90 (94 to 4)
5	PCCD/PC top and intermediate layers	88 (93 to 5)
6	no middle layer	68 (101 to 33)
7	no middle layer, PCCD/PC top	23 (95 to 68)

Additional results showing compositions in which the top and intermediate layer of the invention or top and intermediate layers as in examples 2-5 of the specification were utilized on a PC substrate without  $\text{TiO}_2$  in the substrate. These results, which are set forth in the Table 1 of the Declaration Under Rule 132 filed December 3, 2003, were comparable to those in the specification. When the gloss retention of compositions of the invention is compared to these comparative examples in a graphical display, the result are quite striking.



Nothing in the provides any basis for predicting that the combined nature of the top layer and the intermediate layer claimed would have this type of significance with respect to retention of gloss on weathering.

The Examiner has argued that this evidence is not convincing because the scope of the evidence is allegedly not commensurate with the scope of the claims. In making this argument, the Examiner's position is comparing the number of examples to the scope of the claims, and saying that there are more types of cycloaliphatic polyesters than the one tested. In addition, in the advisory action mailed October 27, 2005, but at no time previously, the Examiner raises the issue that all of the intermediate layers contain the optional  $\text{TiO}_2$  pigment. Applicants respectfully submit that the question of whether a declaration is convincing with respect to the full scope of the claims should require something more on the part of the Examiner than simply counting the number of examples. Rather, if the question of obviousness is to be determined on the record as a whole and from the perspective of a person skilled in the art, then the evidence should be viewed from the perspective of whether the examples are representative. Further, it is not clear what comparison should be used if additional materials were tested.

Looking first at the question of other cycloaliphatic polyesters, the Examiner has asserted that the art teaches PCCD (the polyester tested) as well as a number of other cycloaliphatic polyesters. (Advisory Action of October 27, 2005). At no time, however, has the Examiner stated why a person skilled in the art would not consider PCCD representative or identified a



single other cycloaliphatic polyester as being one that might exhibit different properties. In this regard it is noted that while MacGregor refers to a genus of polyesters, the only specific example of a polyester or a cycloaliphatic polyester is PCCD, and that this polymer is treated as representative. This places Applicants in a difficult position in several respects. First, there is no clear identification of what other polyester(s) the Examiner believes should be tested. Given the focus on numbers of species instead of relevance of the tests, this could lead to testing without end. Second, the only cycloaliphatic polyester taught in the cited art is PCCD, the one that was tested. If Applicants were to test additional polyesters, the change in gloss could not reasonably be compared to PCCD controls. However, preparing actual controls would involve a comparison of the invention to something which has not been shown to be in the prior art. Such a comparison is not required.

With respect to the argument concerning  $\text{TiO}_2$ , Applicants submit that this argument is unfairly submitted at this late stage in an already lengthy prosecution. Should the Board of Appeal find this issue relevant, however, then it requested that the case be returned to the Examiner for a reopening of prosecution to allow for the submission of evidence on this point. Notwithstanding these concerns, this argument is like the one based on the type of cycloaliphatic polyester. The Examiner has offered no reasoning why the results as observed would be different because of the presence or absence of the optional pigment, and thus no reason why a person skilled in the art would not find the results convincing with respect to the scope of the claims.

For these reasons, Applicants submit that even if the the Baord finds there to be a *prima facie* case of obviousness presented, the rejection shoujld nonetheless be reversed based on the showing of unexpected results.

3. *The evidence of record establishes unexpected results for claims 24 and 25*

Finally, the Examiner has asserted that the evidence of unexpected results is not commensurate in scope with the claims, without appropriate consideration of the scope of the dependent claims.

Dependent claim 24 adds the limitation to claim 23 that the cycloaliphatic polyester is PCCD. Thus, with respect to this claim, the argument concerning the testing of other polyesters is not relevant since this is the cycloaliphatic polyester that was tested. Thus, the only apparent objection that could possibly be raised with respect to the sufficiency of the evidence with respect to this claim and claim 25 which is dependent on claim 24, is the belated assertion that testing without  $\text{TiO}_2$ , and possibly with other pigments also needs to be done. As noted above, the Examiner has offered no reasons why a person skilled in the art would think that the result was dependent on the presence of  $\text{TiO}_2$ , and the specification describes pigments as an optional ingredient.

Thus, Applicants submit that at a minimum, the rejection of claims 24 and 25 should be reversed.

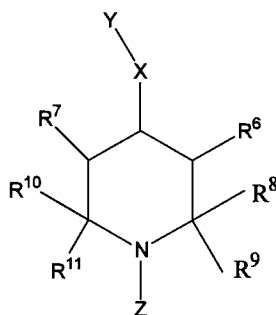
Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Marina T. Larson", is written over a horizontal line.

Marina T. Larson Ph.D.  
PTO Reg. No. 32,038  
Attorney for Applicant  
(970) 262-1800

### Claims Appendix

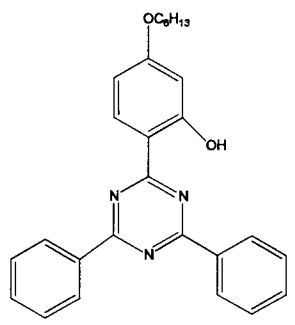
5. The composition of claim 23, wherein said hindered amine light stabilizer is a 4-piperidinol derivative having the general formula



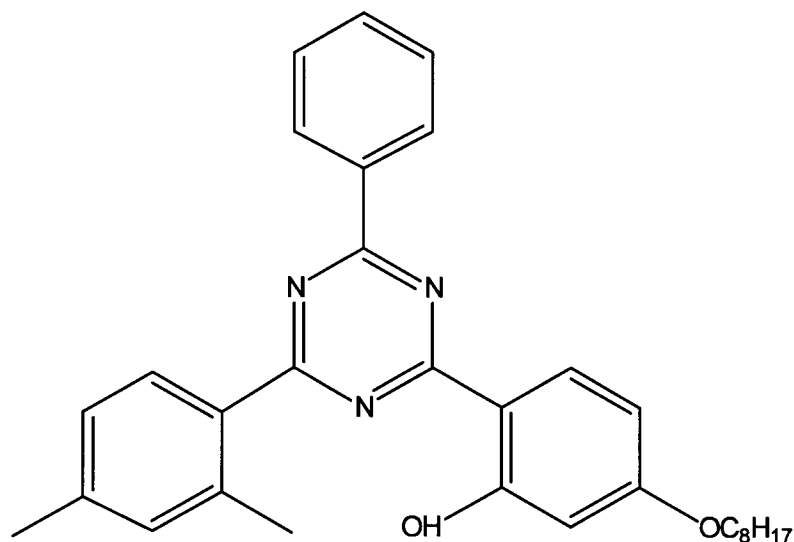
wherein X is oxygen; Y is hydrogen, hydroxyalkyl, aminoalkyl, or alkyl substituted by both hydroxyl and amino groups, where the alkyl moiety when present in Y has up to 20 carbon atoms; R<sup>6</sup> and R<sup>7</sup> are each independently selected from the group consisting of hydrogen, an alkyl group, an alkenyl group, and an arylalkyl group; R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup>, and R<sup>11</sup> are each independently selected from the group consisting of an alkyl group having 1 to 6 carbon atoms, phenyl, an arylalkyl group, and an aromatic heterocyclic group having 5 or 6 carbon and containing an oxygen, sulphur or nitrogen atom, or R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup>, and R<sup>11</sup> respectively, together or with the carbon atom to which they are attached are a C<sub>5</sub> to C<sub>12</sub> cycloalkyl group; and Z is an oxy radical, an alkyl group, an alkenyl group, an alkoxyalkyl group, or an arylalkyl group that is unsubstituted or which has one or more substituents in its aryl moiety.

7. The composition of claim 23, wherein said hindered amine light stabilizer is present in an amount greater than 0.1% by weight, and less than 10% by weight of the total weight of said upper layer.

9. The composition of claim 23, wherein said low volatility hydroxyphenyl-triazine or -pyrimidine UV absorber has the formula:

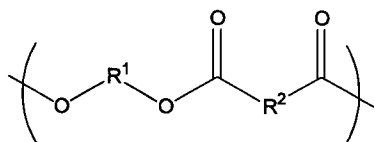


or the formula:



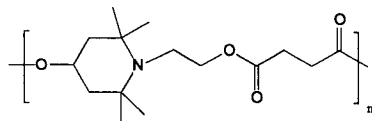
11. The composition of claim 23, wherein the substrate comprises polycarbonate.
12. The composition of claim 23, wherein the substrate is in the form of a film.
13. The composition of claim 23 having a gloss measured at an angle of 60 degrees of more than 60%, a change in gloss of less than 20% after 3000 hours of weathering according to the ISO4892-2A protocol, and a change in color of less than 3 after 3000 hours of weathering according to the ISO4892-2A protocol.
14. The composition of claim 13 wherein the gloss is greater than 70%, the change in gloss is less than 15%, and the change in color is less than 2.
15. The composition of claim 13, wherein the gloss is greater than 80%, the change in gloss is less than 10%, and the change in color is less than 1.
- 16.) The composition of claim 23 having a gloss measured at an angle of 60 degrees of more than 75%, a change in gloss of less than 15% after heat aging at 80°C for three months, and a change in color of less than 2 after heat aging at 80°C for three months.
17. The composition of claim 16 wherein the gloss is greater than 80%, the change in gloss is less than 10%, and the change in color is less than 1.5.
18. The composition of claim 13, wherein the gloss is greater than 85%, the change in gloss is less than 5%, and the change in color is less than 1.

20. An article comprising the composition of claim 23.
21. An article comprising the composition of claim 12.
22. A method for the manufacture of a multilayer article, comprising blow molding the composition of claim 23.
23. A layered composition comprising:  
an upper layer consisting essentially of:  
    (a) a polymer system consisting essentially of a cycloaliphatic polyester; and  
    (b) 0.01 to 10% by weight of a low volatility hydroxyphenyl-triazine or -pyrimidine UV absorber that contains a 2,4,6-trisaryl-1,3,5-triazine moiety and a free hydroxyl group, or that contains a 2,4,6-trisaryl-1,3-pyrimidine moiety and a free hydroxyl group or a mixture thereof ; and  
    (c) 0.01 to 10% by weight of a hindered amine light stabilizer;  
an intermediate layer consisting essentially of a polymer system of a cycloaliphatic polyester and optionally one or more materials selected from the group consisting of TiO<sub>2</sub>, dyes, pigments and special effects additives; and  
a polymeric substrate, wherein the intermediate layer is disposed between and in intimate contact with the upper layer and the polymeric substrate, wherein said cycloaliphatic polyester in the upper and intermediate layers has recurring units of the formula:

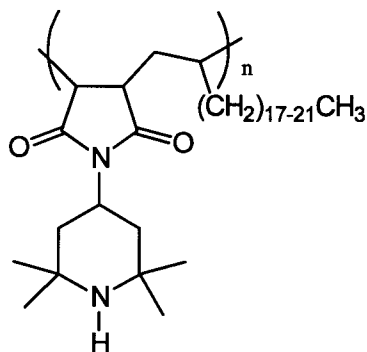


wherein R<sup>1</sup> and R<sup>2</sup> are each a cyclohexylidene, and

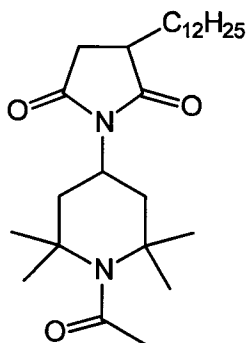
wherein said hindered amine light stabilizer comprises a substituted piperidine moiety or an oligomer substituted piperidine moiety, or has the formula:



wherein n is on average greater than ~~about~~ 9, and less than 12, by the formula:



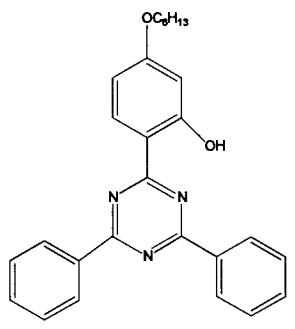
wherein n is on average greater than 4, and less than 7, by the formula:



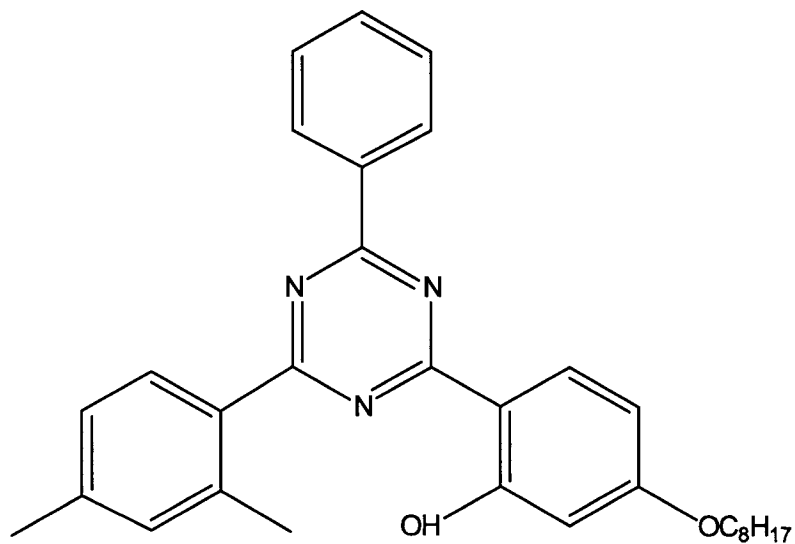
or a mixture comprising at least one of the foregoing hindered amine light stabilizers.

24. The composition of claim 23, wherein the cycloaliphatic polyester in the upper and intermediate layers is poly-1,4-cyclohexane-dimethanol-1,4-cyclohexanedicarboxylate.

25. The composition of claim 24, wherein the low volatility hydroxyphenyl-triazine or -pyrimidine UV absorber is a mixture of a compound of the formula:



and a compound of the formula:



**Evidence Appendix**

**Declaration filed December 3, 2003**

**Declaration filed December 21, 2004**

**Declaration filed September 30, 2005**



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

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Application No.: 09/682,749	Group Art Unit: 1711
Filed: 10/21/2001	Examiner: M. Bissett
Title: Multilayer, Weatherable Compositions and Method of Manufacture Thereof	
Attorney Docket No.: GEPL.P-068	

**DECLARATION UNDER 37 CFR § 1.132**

The undersigned hereby declares as follows:

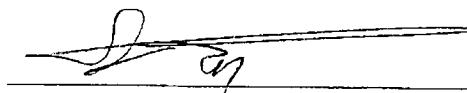
1. I am a named inventor of the above-referenced application, and I am familiar with the application, including the claims thereof.
2. I understand that an Official Action has issued in this case in which the Examiner takes the position that the multilayer composition is obvious in light of the combination of prior art references.
3. Tests have been conducted to demonstrate the gloss retention of the claimed composition as well as comparative tests to demonstrate the unobvious and unexpected results of the combination of an upper layer and an intermediate layer. The results are summarized in table 1. The results show that the use of a hydroxyphenyl triazine or hydroxyphenyl pyrimidine UV absorber in the cycloaliphatic upper layer in conjunction with a specific intermediate layer consisting essentially of a cycloaliphatic polyester, and optionally one or more materials, has unexpected results (see INVENTION of Table 1). These unexpected results include after extended weathering high gloss retention.

Table 1

Test	Top Layer	Intermediate Layer	Bottom Layer	Initial Gloss	500 hrs	2000 hrs	3000 hrs
Comp. 10	PCCD, UV1	PCCD, TiO2	PC	90	88	53	15
Comp. 12	PCCD, UV2	PCCD/PC, TiO2	PC	93	92	60	32
Comp. 13	PCCD/PC, UV1	PCCD/PC, TiO2	PC	94	93	31	4
Comp. 14	PCCD/PC, UV2	PCCD/PC, TiO2	PC	93	89	25	5
INVENTION	PCCD, UV2	PCCD, TiO2	PC	90	88	91	82

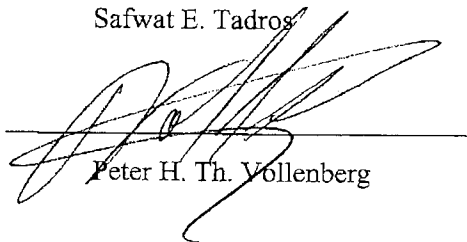
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

dated:

Dec 3, 2003

Safwat E. Tadros

dated:

Dec 3, 2003

Peter H. Th. Vollenberg

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Attorney Docket No.: GEPL.P-068	Confirmation No.: 8016

SECOND DECLARATION UNDER 37 CFR § 1.132

The undersigned hereby declares as follows:

1. I am a named inventor of the above-referenced application, and I am familiar with the application, including the claims thereof.
2. I understand that an Official Action has again issued in this case in which the Examiner takes the position that the multilayer composition is obvious in light of the combination of prior art references.
3. The claimed composition in our application includes three defined layers in a defined spatial relationship, namely an upper layer, an intermediate layer and a substrate layer. The top two of these layers have a well-defined composition. Specifically, the upper layer **consists essentially** of a cycloaliphatic polyester and certain specified types of UV stabilizers; the intermediate layer **consists essentially** of a cycloaliphatic polyester, and may also include TiO<sub>2</sub> or a dye, pigment or special effects additive. An important characteristic of these compositions is the improved gloss retention that is observed upon weathering.
4. Gloss is a characteristic of the outer surface of a material. Those skilled in the art believe that loss of gloss upon weathering is the result of non-homogeneous erosion that takes place on the surface and creates roughness. In the compositions of the present invention, the material used to make

the intermediate layer has a significant affect on the retention of gloss when the material is weathered. The Table below presents data on properties of various composites. Only the first composite is in accordance with the invention. As can be seen from this Table (top box), the gloss retention is dependent on the nature of the compositions' second layer, with only one of the second layer combinations giving good gloss retention.

		3000 hrs Weathering	
top layer	second layer	dE	Gloss
PCCD, UV2	PCCD, TiO <sub>2</sub>	1.1	82
PCCD, UV2	PCCD/PC, TiO <sub>2</sub>	5.2	32
PCCD, UV2	PC, TiO <sub>2</sub>	1.2	33
PCCD/PC, UV2	PCCD/PC, TiO <sub>2</sub>	2.6	5
PCCD/PC, UV2	PC, TiO <sub>2</sub>	5.0	68

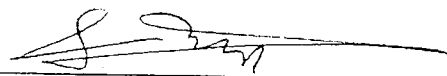
5. Why this would be the case is not really understood. There is no logical explanation for why the nature of this intermediate layer, spaced away from the outer surface would have any bearing on the behavior of this outer surface. Thus, the results, as obtained, are quite surprising and are not something that would have been predicted or expected by a person skilled in the art.

6. It is further noted that the Examiner has argued that you would expect an improvement in color performance using a second or intermediate layer with improved weathering properties. While this argument is facially reasonable, it is not consistent with the results actually observed. For example, in the first portion of the Table above, the Examiner's argument would suggest that the color change dE, should change progressively for the worse as PCCD is replaced with PC. This, however, is not what is observed. Interestingly, the expected trend (using the examiner's analysis) is observed when the top layer includes PC as well as PCCD (lower box in Table above). Thus, the compositions of the present invention, represent an island of uniqueness in which seemingly logical arguments are not applicable, and in which the compositions have unique and unexpected properties, particularly with respect to gloss retention.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

dated:

Sept. 15 2004



Safwat E. Tadros

dated:

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Peter H. Th. Vollenberg

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Tadros	
Application No.: 09/682,749	Group Art Unit: 1711
Filed: 10/12/2001	Examiner: M. Bissett
Title: Multilayer, Weatherable Compositions And Method of Manufacture Thereof	Confirmation No.: 8016
Attorney Docket No.: GEPL.P-068	

SECOND DECLARATION UNDER 37 CFR § 1.132

The undersigned hereby declares as follows:

1. I am a named inventor of the above-referenced application, and I am familiar with the application, including the claims thereof.

2. I understand that an Official Action has again issued in this case in which the Examiner takes the position that the multilayer composition is obvious in light of the combination of prior art references.

3. The claimed composition in our application includes three defined layers in a defined spatial relationship, namely an upper layer, an intermediate layer and a substrate layer. The top two of these layers have a well-defined composition. Specifically, the upper layer **consists essentially** of a cycloaliphatic polyester and certain specified types of UV stabilizers; the intermediate layer **consists essentially** of a cycloaliphatic polyester, and may also include  $\text{TiO}_2$  or a dye, pigment or special effects additive. An important characteristic of these compositions is the improved gloss retention that is observed upon weathering.

4. Gloss is a characteristic of the outer surface of a material. Those skilled in the art believe that loss of gloss upon weathering is the result of non-homogeneous erosion that takes place on the surface and creates roughness. In the compositions of the present invention, the material used to make

the intermediate layer has a significant affect on the retention of gloss when the material is weathered. The Table below presents data on properties of various composites. Only the first composite is in accordance with the invention. As can be seen from this Table (top box), the gloss retention is dependent on the nature of the compositions' second layer, with only one of the second layer combinations giving good gloss retention.

		3000 hrs Weathering	
top layer	second layer	dE	Gloss
PCCD, UV2	PCCD, TiO <sub>2</sub>	1.1	82
PCCD, UV2	PCCD/PC, TiO <sub>2</sub>	5.2	32
PCCD, UV2	PC, TiO <sub>2</sub>	1.2	33
PCCD/PC, UV2	PCCD/PC, TiO <sub>2</sub>	2.6	5
PCCD/PC, UV2	PC, TiO <sub>2</sub>	5.0	68

5. Why this would be the case is not really understood. There is no logical explanation for why the nature of this intermediate layer, spaced away from the outer surface would have any bearing on the behavior of this outer surface. Thus, the results, as obtained, are quite surprising and are not something that would have been predicted or expected by a person skilled in the art.

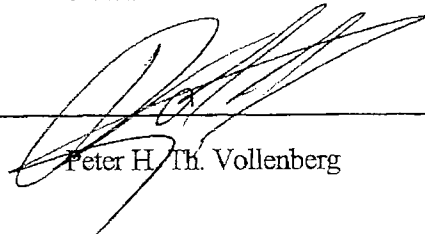
6. It is further noted that the Examiner has argued that you would expect an improvement in color performance using a second or intermediate layer with improved weathering properties. While this argument is facially reasonable, it is not consistent with the results actually observed. For example, in the first portion of the Table above, the Examiner's argument would suggest that the color change dE, should change progressively for the worse as PCCD is replaced with PC. This, however, is not what is observed. Interestingly, the expected trend (using the examiner's analysis) is observed when the top layer includes PC as well as PCCD (lower box in Table above). Thus, the compositions of the present invention, represent an island of uniqueness in which seemingly logical arguments are not applicable, and in which the compositions have unique and unexpected properties, particularly with respect to gloss retention.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

dated: \_\_\_\_\_

\_\_\_\_\_  
Safwat E. Tadros

dated: August 19, 2004

  
\_\_\_\_\_  
Peter H. Th. Vollenberg



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant(s): Tadros	
Application No.: 09/682,749	
Filed: 10/12/2001	Group Art Unit: 1711
Title: Multilayer, Weatherable Compositions And Method of Manufacture Thereof	Examiner: M. Bissett
Attorney Docket No.: GEPL.P-068	Confirmation No.: 8016

THIRD DECLARATION UNDER 37 CFR § 132

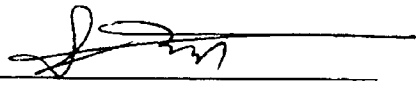
The undersigned hereby declare as follows:

1. I am a named inventor of the above-referenced application, and I am familiar with the application including the claims thereof.
2. I have signed two previous declarations under 37 CFR § 132 in connection with this application. Those declarations set forth test results relating to certain layered structures.
3. In all of the layered structures described in the two prior declarations, the composition of each indicated materials was the same across each indicated structure. For example, in every structure indicated to contain PCCD, the same PCCD material was used in each example.
4. In all of the layered structures described in the two prior declarations, the top layer has a thickness of 10 mils, and the second layer had a thickness of 10 mils. In each case, the top and second layer were placed on a 10 mil polycarbonate substrate.

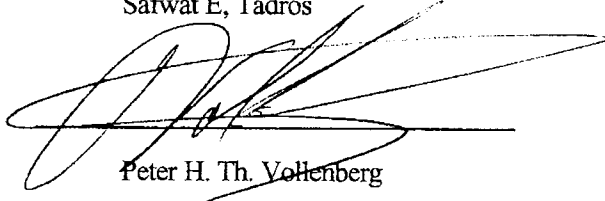
5. In all of the layered compositions described in the two prior declarations the processing conditions and the equipment used were the same.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

dated: Sept. 28, 2005

  
Safwat E. Tadros

dated: Sept. 28, 2005

  
Peter H. Th. Vollenberg

**Related Proceedings Appendix**

None